

THE BLOOD–BRAIN BARRIER AND ITS EFFECT ON ABSORPTION AND DISTRIBUTION

A. G. DE BOER¹ AND P. J. GAILLARD²

¹University of Leiden, Leiden, The Netherlands

²to-BBB Technologies BV, Leiden, The Netherlands

Contents

- 1 Introduction
- 2 Barriers in the Brain
 - 2.1 Blood–Brain Barrier (BBB)
 - 2.2 Blood–Cerebrospinal Fluid Barrier (BCSFB) and Ependyma
- 3 Methods to Measure Drug Transport to the Brain
 - 3.1 *In Vitro* Methods
 - 3.2 *In Vivo* Methods
- 4 Strategies for Drug Delivery to the Brain
 - 4.1 Local Brain Delivery by Direct Injection/Infusion of Drugs into the Brain
 - 4.2 Global Brain Delivery by Vascular Nonviral Drug Administration
- 5 Conclusion
- References

1 INTRODUCTION

The central nervous system (CNS) is a sanctuary site and is protected by various barriers. These regulate brain homeostasis and the transport of endogenous and exogenous compounds by controlling their selective and specific uptake, efflux, and